

REMARKS

Claims 1-4, 6-19, 22, 25, 26, 28-30, 33, and 34 were pending in the above-identified application when last examined. Claims 1, 15, 17, 25, 26, 29, and 34 are currently being amended as indicated above. The claim amendments clarify the claim language.

The Office Action dated December 23, 2008 does not indicate that claim 7 is pending for examination. However, Applicant does not believe that claim 7 has been canceled or withdrawn from consideration. Accordingly, Applicant requests clarification regarding the status of claim 7.

Claims 1-4, 6, 8-18, 25, 26, 28-30, 33, and 34 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicant respectfully traverses the rejection.

Independent claim 1 recites, “A method of processing data in a data processing system.” Accordingly, claim 1 recites a method that is tied to a particular apparatus, particularly a data processing system.

Claims 2-4, 6, 8-14, and 28-30 depend from claim 1 and inherit the statutory subject matter of claim 1.

Independent claim 15 recites, “A method of canonicalizing an RDF graph having a plurality of blank nodes, the method being performed in a data processing system.” Accordingly, claim 15 is tied to a particular apparatus, a data processing system.

Claims 16-18 and 33 depend from claim 15 and inherit the patentable subject matter of claim 15.

Independent claim 25 recites, “A method for a data processing system to generate a signature for data.” Accordingly, claim 25 is also tied to a data processing system (i.e., an apparatus) and contains statutory subject matter.

Claim 26 depends from claim 15 and thus inherits the statutory subject matter of claim 25.

Independent claim 34 recites, “A method for a processing system to canonicalize an RDF graph.” Claim 25 is thus tied to a data processing system (i.e., an apparatus) and contains statutory subject matter.

For the above reasons, Applicant requests reconsideration and withdrawal of the rejection under 35 U.S.C. § 101.

Claims 1-4, 6, 8-14, 19, 25, 26, 28-30, 33, and 34 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. App. Pub. No. 2003/0050927 (Hussam) in view of U.S. Pat. No. 6,774,899 (Ryall) and further in view of U.S. Pat. No. 6,889,226 (O'Neil). Applicant respectfully traverses the rejection.

Independent claim 1 distinguishes over Hussam, Ryall, and O'Neil at least by reciting, "the method is used to canonicalize an RDF graph ... having a plurality of blank nodes, wherein ... the first set of rules include ... assigning a different respective label to those blank nodes that are determined, by a limited examination around each node" The combination of Hussam, Ryall, and O'Neil fail to suggest canonicalizing an RDF (Resource Description Framework) graph and particularly fail to suggest limiting the examination around blank nodes when determining assigning a label to a blank node in a canonicalized RDF graph.

Hussam is primarily directed to search engine functions and describes RDF graphs as a format for metadata that facilitates identification of related information. Hussam also mentions that RDF graphs can be used for generation of digital signatures and describes anonymous or blank nodes in RDF graphs. However, Hussam does not describe a process for signature generation and particularly does not mention canonicalizing of RDF graphs. Further, Hussam nowhere mentions the problems that blank nodes present to canonicalizing a RDF graph or any process for examining around a blank node when assigning a label to a blank node. Ryall is directed to methods for manipulating graphs, but nowhere mentions RDF graphs, digital signatures, or canonicalizing of RDF graphs. O'Neil is primarily directed to reorganizing hierarchical data from a tree structure into a non-hierarchical data structure. O'Neil nowhere mentions RDF graphs, digital signatures, or canonicalizing of RDF graphs. Accordingly, the collective description of Hussam, Ryall, and O'Neil fails to suggest limiting examination around a blank node when canonicalizing an RDF graph.

In accordance with an aspect of Applicant's invention, an RDF graph can be canonicalized (i.e., put into a standard format) so that, for example, a unique signature can be generated based on content or the content of two data structures can more easily be compared. Further, the problem of establishing a label or an order/place for a blank node in standardized format can be solved without performing an exhaustive examination of the relations of the blank node to other portions of the RDF graph. Processing power required for canonicalizing the RDF graph can thus be less than would be required by a brute force exhaustive examination of the RDF graph for each blank node. Hussam, Ryall, and O'Neil fail to

suggest canonicalizing RDF graphs having blank nodes or Applicant's method for doing so as recited in claim 1. Accordingly, claim 1 is patentable over Hussam, Ryall, and O'Neil.

Claims 2-4, 6, 8-14, and 28-30 depend from claim 1 and are patentable over Hussam, Ryall, and O'Neil for at least the same reasons that claim 1 is patentable over Hussam, Ryall, and O'Neil.

Independent claim 19 patentably distinguishes over Hussam, Ryall, and O'Neil by reciting, "the computer program is used to canonicalize an RDF graph ... having a plurality of blank nodes, wherein the processing in accordance with the first set of rules include ... assigning a different respective label to those blank nodes that are determined, by a limited examination around each node." As noted above, in regard to claim 1, Hussam, Ryall, and O'Neil fail to mention or suggest "assigning a different respective label to those blank nodes that are determined, by a **limited examination** around each node" (emphasis added.) Accordingly, claim 19 is patentable over Hussam, Ryall, and O'Neil.

Independent claim 25 distinguishes over Hussam, Ryall, and O'Neil at least by reciting, "assigning a different respective label to each of those blank nodes that are determined, by a limited examination around each node." As noted above, Hussam, Ryall, and O'Neil fail to mention or suggest assigning labels determined by a limited examination around blank nodes. Accordingly, claim 25 is patentable over Hussam, Ryall, and O'Neil.

Claim 26 depends from claim 25 and is patentable over Hussam, Ryall, and O'Neil for at least the same reasons that claim 25 is patentable over Hussam, Ryall, and O'Neil.

Claim 33 depends from claim 15. Claim 15 is patentable over Hussam and Ryall for reasons given below in response to the rejection of independent claim 15. Applicant submits that reasons given below for patentability of claim 15 over Hussam and Ryall also apply to the combination of Hussam, Ryall, and O'Neil. Accordingly, claims 15 and 33 are patentable over Hussam, Ryall, and O'Neil.

Independent claim 34 distinguishes over Hussam, Ryall, and O'Neil at least by reciting, "assigning a different respective label to each of those blank nodes of the graph that are determined, by a limited examination around each node." As noted above, Hussam, Ryall, and O'Neil fail to mention or suggest assigning labels based on a limited examination around blank nodes. Accordingly, claim 34 is patentable over Hussam, Ryall, and O'Neil.

For the above reasons, Applicant requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

Claims 15-18 and 22 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Pat. App. Pub. No. 2003/0050927 (Hussam) in view of U.S. Pat. No. 6,774,899 (Ryall). Applicant respectfully traverses the rejection.

Independent claim 15 distinguishes over the combination of Hussam and Ryall at least by reciting, “A method of canonicalizing an RDF graph ... comprising: generating a representation of the RDF graph ...; assigning a different respective label to each of a number of the plurality of blank nodes; modifying the portion of the blank nodes remaining unlabelled; and reordering the representation.”

Hussam as noted above describes RDF graphs but fails to disclose or suggest canonicalizing an RDF graph. Ryall doesn't mention RDF graphs at all. Accordingly, the combination of Hussam and Ryall give no guidance on how to handle blank nodes when canonicalizing an RDF graph.

Canonicalizing an RDF graph generally involves uniquely assigning a name to a blank node so that triples associated with the nodes can be assigned a definite order. Labeling of blank nodes can be uniquely determined based on exhaustive examination of the RDF graph. However, in accordance with an aspect of Applicant's invention, not all blank nodes need to be labeled in the conventional manner, but some nodes (e.g., the hard-to-label nodes) can be modified (e.g., deleted) to reduce the processing power required for canonicalizing. Hussam and Ryall do not address this problem and fail to suggest the solution as recited in claim 15. Accordingly, claim 15 is patentable over Hussam and Ryall.

Claims 16-18 depend from claim 15 and are patentable over Hussam and Ryall for at least the same reasons that claim 15 is patentable over Hussam and Ryall.

Claim 22 distinguishes over Hussam and Ryall at least by reciting, canonicalizing “an RDF graph having a plurality of blank nodes by: ... assigning a different respective label to each of a number of the plurality of blank nodes; modifying the portion of the blank nodes remaining unlabelled; and reordering the representation.” As noted above, Hussam and Ryall fail to suggest canonicalizing an RDF graph and particularly fail to suggest treating some blank nodes differently from others. Accordingly, claim 22 is patentable over the combination of Hussam and Ryall.

For the above reasons, Applicant requests reconsideration and withdrawal of this rejection under 35 U.S.C. § 103.

Applicant respectfully requests allowance of the application including claims 1-4, 6-19, 22, 25, 26, 28-30, 33, and 34 as presented above. Please contact the undersigned attorney at (530) 621-4545 if there are any questions concerning the application or this document.

Respectfully submitted,

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